

CALIFORNIA ENERGY COMMISSION

1516 NINTH STREET
SACRAMENTO, CA 95814-5512



DATE: November 16, 2007

TO: Interested Parties

FROM: Ron Yasny, Compliance Project Manager

SUBJECT: Gateway Generating Station (formerly Contra Costa Power Plant Unit 8) (00-AFC-1C) Staff Analysis of the proposed change to anhydrous ammonia as the refrigerant in the inlet air chiller

On November 5, 2007, PG&E filed a petition with the California Energy Commission requesting Energy Commission approval to allow the use of anhydrous ammonia as the refrigerant in the closed loop of the project's inlet air chiller system for the Gateway Generating Station (formerly known as Contra Costa Power Plant Unit 8). Staff prepared an analysis of this proposed change, and a copy is enclosed for your information and review.

The 530-megawatt project was certified by the Energy Commission on May 30, 2001. Construction of the facility started late in 2001 and was suspended in February of 2002 due to financial difficulties. On July 19, 2006, the Energy Commission approved the addition of Pacific Gas and Electric (PG&E) as co-owner of the project with Mirant Delta, LLC. On January 3, 2007, the Energy Commission approved PG&E's petition to remove Mirant as a co-owner and change the name of the facility to the Gateway Generating Station. PG&E restarted construction in February of 2007. The facility is located on Wilbur Avenue, east of the city of Antioch, in Contra Costa County.

The proposed modifications will allow the Gateway Generating Station to use anhydrous ammonia as the refrigerant in a closed loop as part of the project's inlet air chiller system.

Energy Commission staff reviewed the petition and assessed the impacts of this proposal on environmental quality, public health and safety, and proposes revisions to existing conditions of certification for HAZ-1, HAZ-4, HAZ-6. It is staff's opinion that, with the implementation of revised conditions, the project will remain in compliance with applicable laws, ordinances, regulations, and standards and that the proposed modifications will not result in a significant adverse direct or cumulative impact to the environment (Title 20, California Code of Regulations, Section 1769).

The petition to amend the project and staff's analysis are available on the Energy Commission's webpage at www.energy.ca.gov/sitingcases/contracosta/compliance/index.html. The Energy Commission's Order (if approved) will also be posted on the webpage. Energy Commission staff intends to recommend approval of the petition at the December 5, 2007

Ammonia Chiller Refrigerant Staff Analysis
November 16, 2007

Energy Commission Business Meeting. If you have comments on this proposed modification, please submit them to me at the following address no later than 5:00 P.M., November 30, 2007:

Ron Yasny, Compliance Project Manager
California Energy Commission
1516 9th Street, MS-2000
Sacramento, CA 95814

Comments may be submitted by fax to (916) 654-3882, or by e-mail to ryasny@energy.state.ca.us. If you have any questions, please contact me at (916) 653-1227.

For further information on how to participate in this proceeding, please contact the Energy Commission's Public Adviser's Office at (916) 654-4489, or toll free in California at (800) 822-6228, or by e-mail at pao@energy.state.ca.us. If you require special accommodations, please contact Lourdes Quiroz at (916) 654-5146. News media inquiries should be directed to Assistant Director, Claudia Chandler, at (916) 654-4989, or by e-mail at mediaoffice@energy.state.ca.us.

Enclosure: Staff Analysis

GATEWAY GENERATING STATION (00-AFC-1C)
Request to Amend Hazardous Materials Management Conditions HAZ-1, 4 and 6
Hazardous Materials Management Staff Analysis
Prepared by: Rick Tyler
November 14, 2007

INTRODUCTION

On November 5, 2007 Pacific Gas and Electric (PG&E) petitioned the California Energy Commission (Energy Commission) to amend the Gateway Generating Station certification to allow the use of anhydrous ammonia as the working fluid in the inlet air chiller. The inlet air chiller is a closed loop refrigeration system that cools the air entering the gas turbine. The original project involved the use of Refrigerant 134A as the working fluid. Anhydrous ammonia is an Extremely Hazardous Material that poses greater risk than 134A in the event of accidental release. The proposed use would result in the presence of 6,800 gallons (35,000 lbs) of anhydrous ammonia at the facility. Use of anhydrous ammonia at the facility could pose a potentially significant risk that was not analyzed in staff's original analysis or reflected in the Commission's decision regarding the facility. Staff is therefore treating the proposed amendment as a significant change to the facility's existing license.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS) COMPLIANCE

No new LORS apply to the facility that were not identified and evaluated in the Commission's Certification of the project. With the minor modifications proposed, the existing conditions of certification are sufficient to ensure compliance with applicable LORS.

CONCLUSIONS AND RECOMMENDATIONS

Large releases of anhydrous ammonia in conjunction with poor atmospheric dispersion conditions can result in injurious or even lethal concentrations of ammonia in the air. Staff requested that PG&E conduct a plausible worst-case analysis of an accidental ammonia release resulting from the proposed use of anhydrous ammonia in the inlet chiller. Staff reviewed the analysis provided by PG&E and agrees that it does reflect a plausible worst-case accidental release and that the risk associated with the proposed use (9.0×10^{-8} per year) is well below one in one million per year (PG&E 2007). Staff views risks below this level to be categorically insignificant. Staff therefore recommends that the Commission approve PG&E's request to allow use of anhydrous ammonia as the working fluid in the inlet chiller closed loop refrigeration system.

PROPOSED MODIFICATIONS TO CONDITIONS OF CERTIFICATION

Staff has proposed modifications to the Hazardous Materials Management conditions of certification as shown below. (**Note:** Deleted text is in ~~striketrough~~, new text is **bold and underlined**)

HAZ-1 No changes are proposed to the condition language, but because PG&E is proposing to add anhydrous ammonia to the list of acceptable hazardous materials allowed onsite, and this list is referenced by the condition as Appendix C, a revised Hazardous Materials table is provided on the following page.

HAZ-4 The aqueous ammonia storage facility and the inlet chiller system shall be designed to either the ASME Pressure Vessel Code and ANSI K61.6 or to API 620. In either case, these ~~storage tank facilities~~ shall be protected by a secondary containment basins capable of holding 150% of the storage volume plus the volume associated with 24 hours of rain assuming the 25-year storm.

Verification: At least sixty days prior to delivery of ~~aqueous ammonia~~ to the storage tanks or inlet chiller system, the project owner shall submit final design drawings and specifications for these ~~ammonia storage tank systems~~ and secondary containment basins to the CPM for review and approval.

HAZ-6 The project owner shall direct all vendors delivering ~~aqueous ammonia~~ to the site to use only tanker truck transport vehicles which meet or exceed the specifications of DOT Code MC-307.

Verification: At least thirty (30) days prior to receipt of ~~aqueous ammonia~~ on site, the project owner shall submit to the CPM for review and approval letters from the supply vendors indicating the specifications of the transport vehicles to be used in the delivery of ~~aqueous ammonia~~ to the site.

REFERENCES

PG&E 2007 - Petition for Change to the Gateway Generating Station Project Inlet Chiller System, Pacific Gas & Electric, CH2MHILL Sacramento California, November 5, 2007.

AFC 2000 – Application for Certification for Contra Costa Unit 8 Dames and Moore for Southern Company, January 21, 2000.

Table 8.12-4
Hazardous Materials to be added at ~~CCPP~~ **GGG** During Operational Phase

Material	CAS Number	Location	Hazardous Characteristics	Maximum Quantity On-Site	Regulatory Thresholds (lbs)			
					Cal-ARP	Federal RQ	Federal TPQ	Federal TQ
Aqueous Ammonia (29%)	7664-41-7	Selective Catalytic Reduction	Corrosive	285,000 lb	500	100	500	20,000
<u>Anhydrous Ammonia</u>	<u>7664-41-7</u>	<u>Inlet Chiller System</u>	<u>Corrosive</u>	<u>32,000 lb</u>	<u>500</u>	<u>100</u>	<u>500</u>	<u>20,000</u>
Sulfuric Acid	7664-93-9	Water Treatment System Cooling Tower	Corrosive	6,000 gal	1,000	1,000	1,000	-
Sodium Hypochlorite	7681-52-9	Water Treatment System	Corrosive, Toxic	6,110 gal	-	-	-	-
Sodium Hydroxide	1310-73-2	Water Treatment System	Corrosive	6,000 gal	-	-	-	-
Sodium Bisulfite	7631-90-5	Water Treatment		110 gal	-	-	-	-
Scale Inhibitor		Water Treatment		110 gal	-	-	-	-
Corrosion Inhibitor (nitrite or molybdate)		Closed loop cooling water		55 gal (2000-2250 ppm)	-	-	-	-
Trisodium Phosphate	7601-54-9	Heat Recovery Steam Generator	Toxic	1,000 lb	-	-	-	-
Dispersant		Cooling Tower		4700 ⁹ -gal	-	-	-	-
Sodium Hydroxide	1310-73-2	Water Treatment System	Corrosive	6,000 gal	-	-	-	-